THE STANDARD

INSIDE

Alabama Board of Licensure for Professional Engineers and Land Surveyors

P.O. Box 304451 | Montgomery, Alabama 36130-4451 | www.bels.alabama.gov

BELS
ALABAMA BOARD FOR ENGINEERS & LAND SURVEYORS
SECOND QUARTER 2020 EDITION

BOARD INFORMATION

- BELS is comprised of seven members representing the professions of engineering and land surveying and two selected to represent the general public at large.
- All members are vetted by specific nominating committees. The committees submit a list of three names to the Governor who will make the appointment.
- Board meetings are held every two months beginning in January and are open to the public.

THE STANDARD is a publication of the Alabama Board of Licensure for Professional Engineers and Land Surveyors. Digital editions will be posted on our website and linked on our social media pages. To subscribe, email griffin.pritchard@bels.alabama.gov

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INSIDE THE DESIGNING MIND

Virus, shutdown and timing

The Grateful Dead, in the late 70s, released a compilation album with the name "What a Long Strange Trip it's Been." What was applicable to their musical journey has been even moreso applicable to today's society. As the Coronavirus Pandemic raged, it shut down states for months on end.

Our agency was one of those closed for March and April and, for those of you who live and die by calendars and timetables, you can imagine what that does to a schedule. Our second issue of the THE STANDARD was originally scheduled to publish in April, around tax time. Then plans changed. So this issue is published in May and issue three will be published in July.

Now, with all that said - let's talk about all the great things (not covid-related, that's in July) that have happened in the first part of 2020. The most notable of accomplishments within the State of Alabama was hands-down the opening of Alabama 20/59 and the culmination of a major design and construction project that took an outdated stretch of roadway and replaced it with a better creation that is built to accommodate hundreds of thousands of travelers motoring along Alabama's busiest thoroughfares.

Also in this issue of THE STANDARD we look at the different ways and the different ages students are exposed to career paths as part of Troy-hosted GEODAY and the Career Discovery event created specifically for Alabama eighth-graders.

THE STANDARD strives to encompass different aspects of the Engineering and Land Surveying professions in each issue.

Please Enjoy.

Griffin Pritchard
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- **NEED A SPEAKER?**

We cover a myriad of PDH / CEU topics:

- Ethics
- Case Studies
- The Investigative Process

Please contact Public Information Specialist Griffin Pritchard to make your request. He can be reached via email at: griffin.pritchard@bels.alabama.gov.

our MISSION

The Alabama Board of Licensure for Professional Engineers and Land Surveyors was established by legislative action in 1935. Its charter is to protect the public by helping to safeguard life, health, and property, and to promote the public welfare by providing for the licensing and regulation of persons in the practices of engineering and land surveying. This purpose is achieved through the establishment of minimum qualifications for entry into the professions of engineering and land surveying, through the adoption of rules defining and delineating unlawful or unethical conduct, and through discipline for those individuals or entities who violate the applicable laws or rules.

COMMUNITY NEWS

USAG DIRECTORATE OF PUBLIC WORKS AND THE TVA AWARDED FOR REDSTONE ARSENAL PROJECT

Recognized for their energy conservation work at Huntsville, Alabama's, Redstone Arsenal workers from the U.S. Army Garrison, the Directorate of Public Works and the Tennessee Valley Authority were honored by the Department of Energy and the Federal Energy Management Program in Washington D.C.

Pictured from left to right are: Dr. Robert Ivester, DOE FEMP Program Director, Mr. Alex Fitzsimmons, Chief of Staff and Acting Deputy Assistant Secretary for Energy Efficiency, DOE Brent Kent, TVA Program Manager Brent Powell, TVA Program Manager Mary Jane Owens, TVA Account Rep Rick Penter, TVA project manager Mark Smith, USAG DPW Energy Manager Joe Davis, USAG DPW Director Col. Kelsey Smith, USAG Commander The Honorable Alex Beehler, Assistant Secretary of the Army - Installations, Energy and Environment Jack Surash, Acting Deputy Assistant Secretary of the Army (Energy & Sustainability).

FOCUSED ON THE TASK AT HAND

Of the nearly 18,000 professional engineers licensed in Alabama, only a portion of them actually reside in the state.

Take Troy Ward (pictured, left) for example. He's a University of Alabama graduate and began his career at U.S. Pipe and Foundry Company. He has spent the past 20 years working for Smyrna, Tennessee - Systems Spray-Cooled. There, he designs and manufactures water-cooled equipment that is used on Electric Arc Furnaces in the steel-making industry.

SEND US YOUR PHOTOS

Please send Griffin Pritchard (griffin.pritchard@bels.alabama.gov) photos of you or your staff depicting what you do on the job or celebrating a work-related accomplishment or award. Photos will be compiled and used in upcoming issues of THE STANDARD and at the end of the year in the annual report.

COMMUNITY NEWS

VISTA ENGINEERING & CONSULTING EARNS INTERNATIONAL ACCREDITATION

Vista Engineering and Consulting, LLC has achieved ISO 17025:2017 accreditation for mechanical testing of metals. The rigorous standards were verified by A2LA, a Maryland-based accreditation body.

"Accreditation by A2LA to ISO standards is a goal we've been determined to achieve for a while now and we're excited that our company has attained this official recognition of our standards of quality," says Raymond Thompson, PhD, PE, owner of Vista Engineering. Dr. Thompson has been recognized as Engineering Council of Birmingham's Engineer of the Year and has recently served as President of the UAB National Alumni Society.

Vista Engineering & Consulting has a 20-year track record providing engineering services to attorneys as expert witnesses in cases that involve failure analysis of metals and materials.

They also work with manufacturers and utilities to analyze and improve materials, designs and processes.

Vista's "state of the art" metallurgical laboratory is now located in Homewood after graduating from Birmingham's Innovation Depot. The lab has been utilized by manufacturers and attorneys from all over the country. The accreditation means that companies can be assured that the quality and accuracy of metallurgy tests are reliable and predictable.

"X" MARKS THE SPOT

Longtime Professional Land Surveyor Sam Martin provided a look into his 40-plus year career with this submission:

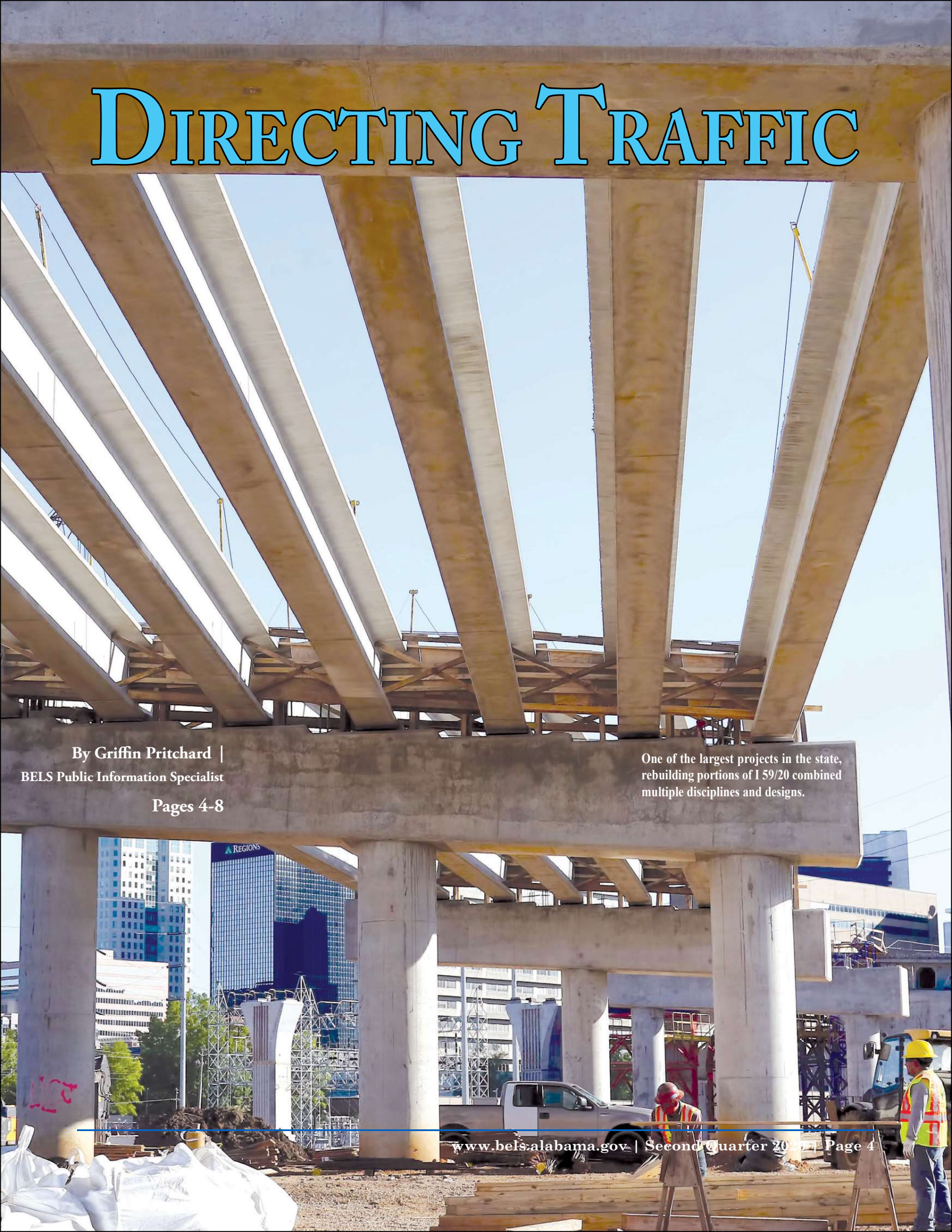
"In the summer of 2012 we were working under contract for a pipeline company in Louisiana tying down boundary corners for easement and right-of-way preparation. While I worked on sketches in my field book, I sent a crew down the hill to find a fence corner to hopefully connect the corner. They had been there for about 15 minutes before I rolled up and asked them if they'd found anything."

'We can't find no evidence anywhere," they said.'

'What about over here where this X is pointing?'"

"After the laughter died down, we took a shot on a 1-inch pipe, painted it white and made it visible and then moved on."

Directing Traffic



By Griffin Pritchard |
BELS Public Information Specialist

Pages 4-8

One of the largest projects in the state, rebuilding portions of I 59/20 combined multiple disciplines and designs.

Out with the old, in with the new

Rock music and good Irish whiskey get better with age.

Roadways, however, do not. Age's effect on a bridge is much greater, and can almost be measured in dog years, due to the vehicular onslaught it absorbs daily. The bridges along Interstate 59/20 and portions of Interstate 65 through Birmingham's Central Business District were constructed nearly 50 years ago and designed to accommodate roughly 80,000 vehicles per day. As the state has grown so has the impact on the traffic through Birmingham. This stretch of roadway has grown to facilitate the highest rate of traffic flow in Alabama, nearly doubling the load the bridges were built to carry.

This project became a necessity. Gov. Kay Ivey said: "An investment in the roads and bridges is an investment in the future of Alabama."

As it stood, those CBD roads and bridges were not going to make it to see the future of Alabama.

A projection 15 years down the road will see that already doubled number doubled again topping 225,000 motorist per day. Something had to give as time passed the original design by making it almost "functionally obsolete."

Linda Crockett (ALDOT Public Information Officer for the East Central Region) in an email response, wrote: "The driving force was the need to replace the aging Central Business District Bridges, which were originally designed in 60s."

Now, keep in mind this is a major vehicular vein – as noted above, heavy traffic coming and going multiple times a day – so there were multiple options and ideas on how to address these issues. One of which was a design that would "bury" the interstate. To fulfill that goal, though, the interstate would be closed to the public for an "unacceptable" time period; up to an additional five years due to the 72 major artery utility lines running beneath the 6,600-foot span of the interstate needing to be relocated.

That idea was scrapped and a new plan to re-route traffic and relocate multiple utility crossings.

According to the project's website 5920bridge.com – this project had four phases and essentially effected multiple motorists throughout the state, therefore a website was needed to better communicate with the public – "the overall cost is expected to be in excess of $700 million and is funded through a combination of funds from the Ala-

Builders (Page 4 & Page 5-6) above and below the Central Business District bridges work to complete the project ahead of schedule. The I59/20 project was completed and the roadways opened in January 2020.

--- Photos Courtesy of ALDOT

bama Department of Transportation, The Federal Highway Administration and the Birmingham Metropolitan Planning Organization.

While the cost of the project forms an easy tally, what doesn't compute so succinctly is the number of man-hours needed to complete a project of this magnitude. According to Crockett, "between the contractors, ALDOT [workers and engineers] consultants, etc., it's difficult to say just how many man hours were accumulated."

For a project of this magnitude – easily the largest road and bridge project in recent years in Alabama – the answer is simple: a multitude. A great multitude of man-hours were needed to put the finishing touches on a project that was first conceptualized in 2015. The project – following a December push that saw workers toiling both day and night to finish ahead of schedule – was dedicated by Gov. Kay Ivey on January 17, 2020 and the first cars rolled through later that day around 9 p.m. The roadway was officially declared open on January 18.

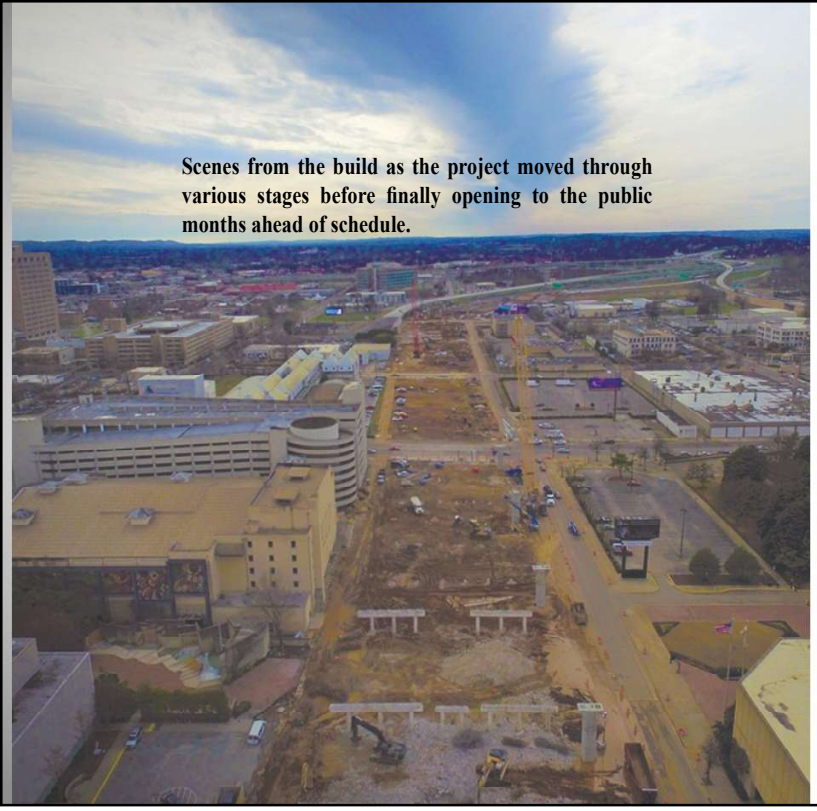
"Traffic flow through the downtown interstates seems to be much better," Crockett wrote. "The new CBD Bridges have an additional lane as well as auxiliary lanes for exit ramps. Lanes are also being added to the Red Mountain Expressway interchange.

By adding the additional lanes, drivers traveling between those two highways will now be able to stay in the same lane when entering and exiting instead of having to merge through at-speed traffic.

ALDOT East Central Region Engineer DeJarvis Leonard, in a message to BELS, said: "We are very proud to have been a part of this highly successful project. Many items remain to be completed including drainage, paving, grading, lighting and sidewalks under the bridges. The remaining work has been made easier by opening the bridges and taking the traffic off the surface street."

While the ahead-of-schedule opening benefits the state's drivers, it also proved to be a win-fall for Texas-based contractor Johnson Brothers Corp. The group was given a completion deadline of March 21, 2020 or face a fine of $250,000 per day. Now – according to an AL.Com article – Johnson Brothers Corp., was also given an incentive for every day the bridges were open prior to March 21: $250,000 a day prior to the deadline, with a maximum total of $15 million.

"We're here to provide a project for the State of Alabama and the city of Birmingham that's quality and I think we've done that," Operations Manager Mike



Scenes from the build as the project moved through various stages before finally opening to the public months ahead of schedule.

Brown said.

BROKEN INTO PHASES

A project of such magnitude and myriad moving parts could not be completed in one phase. Multiple plans needed to be in place before the first charge was placed leading to the fall of multiple bridges throughout the Central Business District.

"Sain first got involved with this project in 2013," wrote Jim Meads, President and CEO of Birmingham's Sain Associates. "We initially worked on designing ITS deployments (cameras, message boards, traffic data collectors and fiber and wireless communications) that supported all aspects of this project and then moved into traffic projections and retiming the city's signal system on the affected routes."

The manipulation and redirection of traffic and information flow proved to be a success, Meads added.

His peers agreed as Sain and Associates was recognized as a Grand Award winner by the Alabama Section of the American Council of Civil Engineering Companies.

Crockett said of logistical issues facing ALDOT: "Construction in an urban environment while accommodating vehicular and pedestrian traffic complicated the project. Detours were created. Material deliveries were made around peak hours. Ultimately though, the safety of both the workers and the motorists was the highest of priorities."

According to a factsheet from the ALDOT: "the greatest issue to overcome is space. While there is sufficient width between existing buildings for the road itself, the space is insufficient to accommodate full shoulders, or to actually dig the trench – working slopes would be required, causing the "dig" to get underneath numerous adjoining buildings, weakening their foundational support."

And then there was the rain. That proved to be an issue.

"The main headache," according to Crockett, "was the compressed schedule. Many items of work had to be completed within a very tight schedule. Other (issues) were traffic, scheduling and communication with the public."

THE CONSTRUCTION PROCESS

Minimizing downtown was paramount along with safety. To help expedite the process, a different way to build was created.

According to ALDOT: "…the new bridges were erected through segmental construction. The bridge's 2,316 segments and 153 columns were pre-cast offsite at a nearby casting yard. The contractor worked on multiple sections simultaneously to allow for continuous progression. Segments were installed at a rate of approximately

400 per month and all new bridge caps were put into place. A construction project of such breadth and depth causes multiple levels of anxiety.

"The traffic volume increases on the detour route were noticeable, but manageable," wrote Meads. "Leading up to the bridge closure, commuters in the area were very worried about how it was going to affect their daily drive. People were expecting the worst-case scenario with gridlock on every street.

Sain went to work designing a plan that would prove effective and logical to those needing to navigate the construction area.

"A lot of planning and stakeholder coordination went into the design and location of the ITS deployment," wrote Meads. "We took on more of a traffic engineer role to determine the impact the additional traffic was going to have on the proposed detour routes."

Meads said his team worked with Regional Planning Commission of Greater Birmingham's travel demand model and were able to remove the affected interstate segment and redesign around it.

Engineering is about collecting data and formulating a plan.

Meads: "We built a large traffic analysis and simulation model to determine potential chokepoint locations."

Chokepoint is the professional term for what is commonly known as a "bottleneck" or to a commuter as an "area of mass profanity."

Back to Meads: "After reviewing those chokepoints we proposed recommendations on traffic operations and roadway geometry that would help improve traffic flow. When the bridges actually closed, we had a team monitoring ALDOT and the City of Birmingham's traffic management centers and made changes to the signal timings as needed."

COMMUNICATING WITH THE PUBLIC

In any type of project – be it building a new roadway or pouring a sidewalk – honest and constant communication with the public is a necessity. The I59/20 project was no different.

The message, however, had to reach a much broader audience because now it's focusing on a stretch of road that averaged 80,000 cars a day. The conversation had to be ongoing and not one-sided. To that end, the public information team at ALDOT crafted a campaign that was comprehensive in its focus and informative enough to highlight public awareness with the focus of informing the community, commuters and all additional stakeholders.

"We sent out weekly media releases, did monthly briefings, lots of social media," Crockett said. "Citizens were able to sign up for ALGO to receive messages on their phones and email addresses, etc."

ALGO is a joint effort website between ALDOT, ALEA and the FMSCA (Federal Motor Carrier Safety Association) that provides live traffic camera feeds and updates on Alabama roads.

Additional efforts – according to ALDOT – included the creation of a project-specific website that was updated on an almost daily basis with closure announcements and detour routes; social media outreach; geographically-targeted digital advertising and public service style media briefings.

The website and a strong social media presence, according to Crockett, "helped tremendously."

The messaging reach was broadened thanks to strategic partnerships with the City of Birmingham, Jefferson County Emergency Management, the Birmingham-Jefferson Civic Complex and both the Alabama and American Trucking Associations.

Along with the communications efforts, Meads and Sain worked diligently to improve the quality of driver's lives as they mitigated and navigated this all-encompassing project.

"In our signal-retiming efforts we did everything we could to mitigate those impacts (more cars, delays and emissions) and provide short-term benefits to the everyday road users. In the long term, this project provides a safer bridge for anyone traveling over (and under) it and additional lanes."

IN THE END

The countless man-hours and the goal of a bonus aided in the January opening. Now that the project, the main road project, has been completed ALDOT can focus on making repairs to the side streets utilized as detour routes throughout the duration of the project.

GEOGRAPHICAL LEARNING

By Griffin Pritchard |
BELS Public Information Specialist

Pages 9-10

As part of Troy University's second GEODay, students were treated to different aspects of the Land Surveying profession, such as the usages of drones by ALDOT.

For the second year, Troy University's Surveying and Geomatics Sciences Program opened its doors to students from throughout the state with the goal of touting the program and hoping to guide some students to the former Teacher's College in the fall. In the inaugural year, the students in attendance filled a theater. Year two was a different turnout as the one-day learning opportunity was conflicted by the ACT. With a little more than 100 in attendance, the presenters made sure the students were able to get their money's worth.

"The smaller groups worked out better for us, in that the attendees were more engaged," Dr. Steve Ramroop, program director and associate professor within the Geospatial Information Department. "This a good indication because it meant that we are bridging the gap between this generation's understanding of what is involved in geospatial informatics, and how relevant it has been (without they even being aware of it) and continues to develop with the new technologies. Making it interactive by asking them relevant questions did certainly gain their interest. Putting it into perspective with what they heard about, or already know, was an added advantage in making it real for them. And of course, they were amazed by all the ALDOT Technologies."

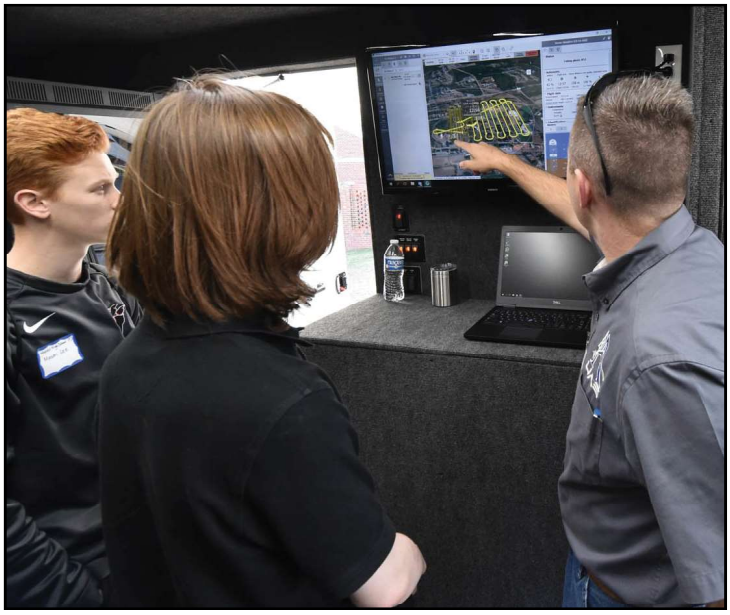
Those technologies from the Alabama Department of Transportation take surveying into the 21st century; drones and virtual reality mapping were just a handful of the items on display. This year's event featured four different topics -- Mapping your Future, LiDAR, Modern Mapping and Mapping with Drones – which walked the students through the different careers stemming from the profession of Land Surveying. The two educators – at the close of their presentation – broached the topic of GIS and its multiple uses ranging from mapping hurricanes, to distance and tracking numbers of positives during the current Covid-19 pandemic.

"Attendees did leave with one thought in mind which was, to choose relevant careers under the umbrella of geospatial infomatics," said Ramroop. "Teachers were also interested in the Geomentor Program. Other students were interested in the amazing technologies. IT was an excellent opportunity to explain to them how all of the technologies they are familiar with work within the context of concepts they'd been exposed to: AI, AR, VR and the like."

Let's talk Geomentors for a moment. According to the website (aag.org/geomentors): "the GeoMentors program, developed by the American Association of Geographers in collaboration with Esri is a nationwide network of volunteers who help K-12 schools, teachers and informal education groups introduce GIS and geographic concepts to students across the United

Troy professor Dr. Steve Ramroop discusses the school's Geomatics Sciences program (top). Students get a lesson in drone mapping from ALDOT's staff (below).

Page 10 Photos: Cliff Lusk | Troy U



States. Volunteers collaborate with educators to help them include and expand spatial thinking and/or GIS in their curricula to enhance educational experiences for students."

Amongst the students in attendance were several from Coastal Alabama Community College. They will be attending Troy in the fall.

"We continuously reiterated the need for licensed Land Surveyors," said Ramroop.

With two events in the books the focus now turns to year three and the first order of business to avoid any scheduling conflicts. Ramroop and Niu with the help of the Alabama Society of Professional Land Surveyors also plan to keep the presentations entertaining and engaging and be at the forefront of technological advances within the profession.

"This year's model worked," Ramroop added, "but will require some tweaking."

EDUCATION NEWS

UNIVERSITY OF ALABAMA: ENGINEERING PROFESSOR NAMED IEEE FELLOW

A professor in the College of Engineering has been recognized by an international organization for his extensive research on Wi-Fi standardization. Dr. Yang Xiao, a professor in The University of Alabama Department of Computer Science, has been named an IEEE Fellow for the class of 2020.

"IEEE Fellow is recognized internationally and it is a prestigious honor," Xiao said.

The Institute of Electrical and Electronic Engineers is one of the world's leading professional associations for advancing technology with more than 400,000 members in 160 countries. Becoming an IEEE Fellow is the highest grade of membership. Xiao is being recognized for his work with wireless medium access control as well as his various research topics.

Xiao has been a member of IEEE for 20 years and is appreciative of this distinguished international honor. He is currently the only professor at The University of Alabama to hold this title.

Some of Xiao's research interests are in security, smart grid, telemedicine and cyber physical systems. He has published over 280 Science Citation Index journal papers and more than 250 Ei Compendex conference papers. He currently supervises five doctorate students in computer security and networking areas. In the past, he has supervised 12 doctoral dissertations at UA.

Becoming an IEEE Fellow is highly recognized and serves as an outstanding professional accomplishment. The association recognizes that UA is dedicated to achieving excellence in research and intellectual engagement.

--- Information & Photo Courtesy University of Alabama

ALABAMA ENGINEERING HALL OF FAME

By Griffin Pritchard |
BELS Public Information Specialist

Pages 11-13

Pictured are 2020 inductees: Mike Johns, Kenneth Kelly, Jody Singer, Linda Ducharme, Sheila Cummings and David Mobley.

A Hall of Fame is a collection of individuals honored amongst their peers for accomplishments within a certain field. Founded in 1987, the State of Alabama Engineering Hall of Fame accomplishes that task by bringing recognition to professionals for their dedication to craft and also to highlight some of the best and brightest working within the State of Alabama.

In February, a host of talents was added to the register as six individuals were honored at the University of Alabama, the Hall's home.

Sheila Cummings, Linda DuCharme, Michael Johns, Kenneth Kelly, David Mobley and Jody Singer had their moment in the spotlight for careers spanning multiple decades and impactful projects.

According to the event organizers: "The Board of Directors is extremely proud of those inducted into the State of Alabama Engineering Hall of Fame. Individually and collectively, they made and continue to make significant contributions to the advances of engineering and technology, leading to an enhanced economic, cultural and political future for the state and nation. By their selection and example, they inspire others to pursue rewarding and challenging careers in all engineering fields."

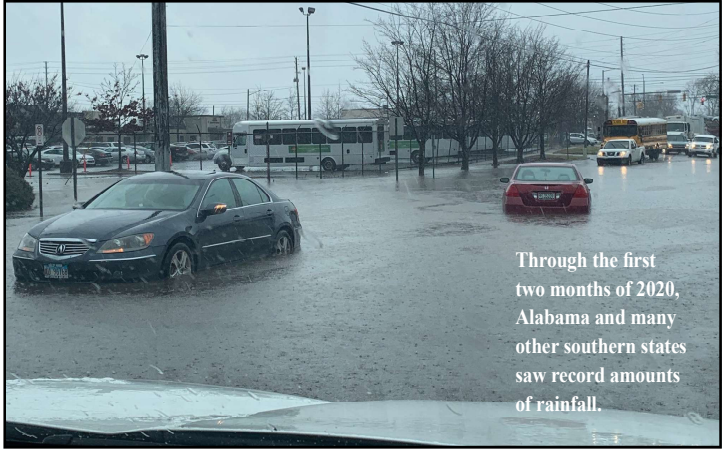
Like the inductees that comprise it, each class is different. This group lives up to the trend, taking different paths to the Hall. As unique as their stories, the unifying factor is their contributions to the profession, their home state and to the country at large. The inductees took strides to better the profession and the world for the generations that follow by working for nonprofits, blazing trails for women in the profession and casting an eye to the stars. On the following pages you will have the opportunity to meet the newest Hall of Fame Class.

SHEILA CUMMINGS: *Pioneering Engineer*

Cummings has used her engineering expertise to support national defense and aerospace missions. Pioneering her own Native American Woman-owned business. Cummings is the founder and CEO of Cummings Aerospace Inc., in Huntsville. In her career (both at Cummings Aerospace and prior too) she has provided engineering support to numerous missile defense programs including Multiple Kill Vehicle, Airbone Infrared and Enhanced C2BMC. After expanding to offices in Niceville and Largo, Florida, Cummings has grown to specialize in the flight sciences of complex aerospace systems development for the United States Department of Defence and NASA customers.

LINDA DUCHARME: ***Expert Engineer***

DuCharme joined Exxon Compnay USA in 1986. Thirty years later she was appointed President of ExxonMobil Global Services Company where she led global organizations providing support in Information Technology, Procurement, Global Real Estate and Facilities and Environmental Services. In her many leadership roles within ExxonMobil DuCharme has advocated for greater representation of women within her industry. She has established tangible protocols for partnerships with women-owned businesses and worked with WE-Connect International (a networking group for women-owned business outside of the U.S.) to



Through the first two months of 2020, Alabama and many other southern states saw record amounts of rainfall.

SETTING THE RECORDS

RECORD RAINFALL AND THE EFFECTS ON PROPERTY

Through the first two months of 2020, Alabama and many southern states saw record amounts of rainfall causing the water to pool in low-lying areas and perennial flashflood warnings to be issued.

So how much rainfall constitutes record-setting?

According to the National Weather Service, some parts of the state saw as much as five inches of rain over a span of 24 hours. To put that into perspective, the record rainfall for the City of Montgomery was 3.24 inches in 2006, Huntsville was 2.25 inches set in 1955 and Muscle Shoals high-water mark was set at 2.29 inches in 1914 according to AL.Com.

With that much water falling, that quickly, it can change and possibly damage the landscape.

According to FEMA, damage from flooding is one of the most common and costly hazards in the United States with a 1-in-4 chance that homeowners will deal with it over the span of their 30-year mortgage.

Standing water, according to FEMA, can cause structural damage as seen by the small-scale landslides and failed roadways throughout the state, along with posing an electrocution risk and flooded streets. On farmland, standing water can lead to crop damage and can ultimately pollute well-water and damage septic systems. One of the largest problems – as seen from standing water stemming from Hurricane Katrina in New Orleans – is bacteria and mold growth.

It's just water, it'll dry up. Not so fast.

FEMA notes, according to State Farm, that mold can "begin to grow on any dam surface within 24-48 hours."

Mold can affix itself not only to the structure of the home, but to cloth items as well.

increase the participation of women-owned businesses in ExxonMobil's supply chain. Her efforts were celebrated in 2017 when WEConnect named ExxonMobil its Corporation of the Year.

MICHAEL JOHNS: ***Engineering Researcher***

Through Johns's efforts Alabama has moved to the forefront of engineering and science research. Working as vice president (engineering division) of the independent, nonprofit Southern Research Institute Johns has grow in annual revenue in excess of $25 million in research volume for a division that employs more than 100 engineers, scientists and support staff. A University of Alabama graduate, he now heads a team of researchers focusing on electromechanical systems and integration, aerospace engineering, hypersonic materials and structures, material engineering, automotive engineering, directed energy, additive manufacturing, cybersecurity and computational sciences. Johns is also overseeing Southern Research's growth into different markets: Huntsville, Washington D.C. and Houston and has previously served as director of governmental affairs. Given all he has accomplished, he also helped to establish the Alabama section of the Society of Automotive Engineers and helped to grow the state's automotive industry.

KENNETH KELLY: ***Cross-Functional Leader***

Kelly is an anomaly on the list, currently serving as the chairman and CEO of First Independence Bank Detroit. Applying engineering principals to the business side of the profession has served as his strength. Kelly, through this approach, helped move Southern Company into the modern era of clean power. The Eufaula native's career with Southern Company spanned 27 years. In 2012, working as Southern Power's Business Development group, Kelly was responsible for leading negotiations to acquire the first solar facility by Southern Company in the State of California, representing an investment exceeding $500 million. He went on to lead acquisitions of solar projects topping $3 billion in partnership asset value totaling $146 million in first-year net income for the company.

DAVID MOBLEY: ***Engineering Solutions***

Among Mobley's lasting achievements and contributions is the "brokering of a peaceful and technically awe-inspiring collaboration to birth the International Space Station, one of the greatest engineering feats in human history."

Mobley worked with Russia to involve them with the ISS, which also involved agencies from Europe and Japan. His ability to communicate, network and form friendships were key in forging a working relationship with Russian engineers, setting a precedent for space adventures and exploits to come and were detailed in the book Dragonfly: NASA and the Crisis Aboard Mir.

His efforts led him to become NASA's Chief Engineer before retiring from a 35-year career in Federal Service. He remains active as a consultant and expert for NASA and its contractors.

JODY SINGER: ***Skillful Leader***

Singer has set her sights on the moon and for more than three decades has dedicated her career to accomplishing that feat. The Hartselle, Alabama, native leads a squad of nearly 6,000 civil servants and contractors and a budget just south of $3 billion as director of NASA's Marshall Space Flight Center in Huntsville. She started her career in the Rocket City as a professional intern in 1986.

She was appointed Deputy Director of Marshall in 2016 after successfully managing and improving the Flight Programs and Partnership Office at Marshall focusing on the center's work with human advanced exploration projects and science flight mission programs to name a few of her tasks. In July 2018 her appointment changed from acting director to full-time director and became the first woman to head Marshall.

WHORTON REAPPOINTED

By Griffin Pritchard |
BELS Public Information Specialist
Pages 14-16

Randy Whorton (center) goes over a set of drawings with P.E.'s Zachary Butterworth and Eddie Smith. Whorton, who is serving as Board chair this year, has been reappointed to BELS and will serve until 2025.

Being selected to serve as part of the Board of Licensure, to an extent, means the appointee sets aside personal goals and focuses on those that benefit the citizens of the state they are appointed to serve. Randy Whorton – who was reappointed to a second term May 1– already had the team-first mentality and has had the opportunity to extend that vision.

"Really, personal accomplishments do not happen with the Board," Whorton said. "I am glad to say that accomplishments are earned equally through cooperation of all Board members, Board staff, attorney and many others. This is a fact of both life and business."

Whorton referenced both the book of Proverbs and Steve Jobs as guiding principles in his approach to both business and board service: "(quoting Jobs) Great things in business are never done by one person."

With the "we before me" mindset, Whorton did highlight two areas of success and he was proud to be a part of during his first term on the board:

First is the sweeping law change that went into effect in 2018.

"During my first term, there were several items needing attention that required the entire board to come together as a team," said Whorton. "One of those was a major update to the Alabama State Law for Engineering and Land Surveyors. Many hours by various Board Members were needed to achieve this goal. Board Members are not politicians and the task could not have been accomplished without guidance and a lot of assistance from our busy legislators and Governor. I have a new respect for the work and effort they put into their jobs. Certainly, active involvement was required by all Board Members."

But the law change was a total community effort as, leading up to drafting of the bill, multiple town halls meetings, public hearings, etc., were scheduled at vari-

ous locations throughout the state.

"A year later, that goal was still not accomplished," said Whorton. "I am proud that the proper time was allocated, and that the status of our laws was indeed finally updated and strengthened."

The law changes were sweeping, touching various parts of BELS law and code: (1) the addition of two public members; (2) Changes needed to better implement biennial license renewals; (3) amending the laws related to QBS; (4) making adjustments to the QBS law for land surveyors and (5) changing the education requirement for licensure for Land Surveyors.

"I discovered that it is not an easy task to get an 80-plus page document through the legislation process and signed into law," said Whorton. "Again, a big thank you goes out to those legislators and the Governor who went out their way to support these improvements. While supportive, they were also vigilant to review each of the proposed changes and be sure that they were in the best interest of the people of the State of Alabama and fair to the professionals impacted."

Better communicating with the community leads to Whorton's next proudest accomplishment: Public Outreach.

"I believe that the Board has made major improvements in public outreach, education, establishing an internet presence, webinars and improvements to the BELS website," said Whorton.

Board Members, in their last term are confronted with a decision: Do I stay or Do I go?

A Board Member has to go through the nomination process, the interview process and ultimately their fate falls in the hands of the Governor to be reappointed. Whorton found out he had been reappointed during a phone conversation with the BELS office May 4.

He joins Marc Barter and Nathan Johnson as reappointments currently sitting around the table.

But, as demanding as it is to serve, Whorton found reasons to seek reappointment.

Whorton: "The experience in my role on the Board, and especially this year as Chair has been very fulfilling and at times challenging. The opportunity allowed me to serve the State of Alabama and have an impact in a very non-political way. The experience has allowed me the opportunity to get to know other Board Members as well as engineers and land surveyors throughout the state in both a personal and professional way. I have been very blessed to serve. My firm is not large, but small with about 13 employees, so this is something I felt would never happen."

Now that Whorton knows he's been appointed to a second term he can be forward facing as to goals and topics for the Board to discuss in the coming months and years.

"I want to make it a personal goal to reach out to associates, engineers, surveyors, educators, etc., in a more personal way during my final term," said Whorton. "I want to be a good listener and helper whenever possible. There are many issues that linger on the forefront. These cause concern to me as well as other engineers and land surveying professionals."

Whorton highlighted License Mobility (moving licenses from one state to another) and Remote Supervision for Engineering Licensure as two topics he wants to further explore.

"Our state law defines how we, as a Board, operate and handle this issue," said Whorton.

"Mobility sounds like a great idea and certainly deserves consideration. NCEES has become a major proponent of mobility in a big way. Board members see this in every NCEES meeting we attend. However, there are states with vastly different laws related to licensure. Some have paths that do not include our education requirements, testing, training, etc. A carte blanche approach to approval is not wise and not lawful in Alabama. Mobility could become dangerous and result in life-threatening impact to the people of Alabama."

Remote Supervision for Engineering licensure is a topic of discussion bantered about by board members from time to time.

"Our laws are clear about the issue of how to handle proper supervision and oversite required for licensing engineers-in-training (interns)," said Whorton. "Issues regularly arise about remote supervision and the resulting implications. The increase in technologies such as video conferencing, remote meetings, documentation, etc., will be reviewed. A committee of board members is being formed to review the possibilities, implications and to research how other states are handling this issue.

EDUCATION NEWS

AUBURN UNIVERSITY: CIVIL ENGINEERS AID ALDOT AFTER LANDSLIDE

A team of Auburn University civil engineering graduate students and researchers are gaining real-world, hands-on experience that will benefit a community south of Huntsville after a landslide closed a section of U.S. 231 on top of Brindlee Mountain. The team is led by assistant professor Jack Montgomery, as they attempt to map the layers of rock below the road's surface and identify what is causing the road to crack. The team, ultimately, will deliver its results to the Alabama Department of Transportation.

"It's kind of a big deal for us as we get to get out and work a high-profile project and hopefully show what we can do and show that we can help people," Michael Kiernan, doctoral student in civil engineering, told the television station WAAY31.

The team conducted testing on February 17 and performed additional tests a few days later.

The road remains closed until ALDOT is able to design a repair for the slide.

"We're working as hard as we can, as quickly as we can," ALDOT engineer Curtis Vincent told television station WAFF48. "We have expertise on site evaluating the situation."

Montgomery said his students volunteered to help because they knew how many people would be impacted by the road closure.

--- Information & Photo Courtesy of Auburn University

We will welcome input from all engineers, land surveyors and persons with interest."

Along with topics for the Board to discuss in the coming years, Whorton is also looking to the next generation of professional leaders.

Whorton explained it like this: "the Board does require time but is also fulfilling.:"

"The first five-year term opened my eyes to a broader field of view, different from just designing and engineering various projects," said Whorton. "There are many different aspects to the practice of land surveying and engineering, more than just providing a proper set of plans. We must do our job in a moral, honorable, respectful and ethical manner. I have learned that my role as a Board Member is distinctly separate from any personal business interests. Our role as a Board is to serve the people of Alabama. It is not to push any personal agenda or push items that might be good for engineers or good for land surveyors unless they impact the life, safety, health and welfare of the public in the State of Alabama. As a consulting mechanical engineer with a private practice firm, I am required to draw a hard line. There are times when issues arise and are supported by engineering and land surveying organizations, companies, etc. that are good and very needed to our respective profession. However, we must evaluate the impact and appearance of our involvement as a Board Member and assure that we handle these situations correctly."

The Board met May 19 and are scheduled to next meet in July.

REMAINING 2020 BELS MEETING DATES:

JULY 21 | SEPTEMBER 15 | NOVEMBER 17

BUILDING A BETTER TOMORROW

By Griffin Pritchard |
BELS Public Information Specialist

Pages 17-18

Despite a day filled with constant rain, students from throughout the central part of Alabama converged on Trenholm State campus to take part in Career Discovery 2020.

The event introduced students to the different professions ranging from photography (top) to agriculture and livestock (above, left) to the manufacturing industry (right) and many more career paths to choose as they grow.

Studies show that children exposed to careers early in their educational journey will, more than likely pursue related fields the older they get. Exposing students to different career paths is the central goal of the group Central Alabama Works as they just hosted an event at Trenholm State before the world shut down and has a second one planned for later this fall at Southern Union State Community College in Opelika, Alabama.

"The events are designed to provide eighth grade students across the region (encompassing multiple counties across the central part of the state) an opportunity to learn about options of careers in the local area," said Lisa Gaither, Project Manager for the Career Discovery Expo.

"It's necessary for (the students) to have the opportunity because they will be making important career track choices beginning in the ninth grade."

At the Trenholm event in March, eighth graders from public and private schools covering a 13-county area were given the opportunity to interact with professionals from a litany of career fields: engineering, architecture and construction, nursing, tourism, manufacturing and information technology (to name a few).

"The industry reps are crucial to the expo and to the

NCEES INFO

NCEES is currently seeking licensed petroleum engineers to participate in a professional activities and knowledge study, or PAKS, for the PE Petroleum exam. The results of this online survey will be used to update specifications for the exam, which is used throughout the United States for licensing purposes.

NCEES requires a cross section of licensed professional engineers practicing petroleum engineering—including those working in industry, consulting, the public sector, and academia—to complete an online survey about the tasks and knowledge required of a licensed petroleum engineer with four to six years of experience to practice in a manner that safeguards the health, safety, and welfare of the public. The survey can be completed in approximately 40 minutes and the deadline to participate is July 15.

"These studies help NCEES ensure its licensing exams remain relevant to current professional practice," explained Director of Exam Services Tim Miller, P.E. "The value of this PAKS depends on the number of people who participate, so NCEES is eager to get a large response from professional engineers across all areas of petroleum engineering."

Additional information can be found here: https://www.research.net/r/PE-Petroleum and the survey answeres will be used to shape the professional petroleum exam.

students," said Gaither. "The activities they bring help to provide practical hands-on experience of the similar skillsets students will need to begin to cultivate for that industry."

For instance, students interested in engineering had the opportunity to build makeshift structures using popsicle sticks and sticky tack. Those interested in photography as a profession had a group picture taken and then were able to watch the professional photographer edit the picture.

"The Industry reps are experts in their fields and without that type of representation, the expo wouldn't be as engaging for the students," said Gaither. "And, it wouldn't provide a realistic picture of the types of skill needed."

EDUCATION NEWS

UAB: HISTORY MADE DURING CIVIL ENGINEERING GRADUATION CEREMONY

Pictured are Sandra Cutts, Jaquice Boyd and Ashlyn Manzella, a trio of Alabama residents earning their PHD's from UAB.
--- Information & Photos Courtesy of University of Alabama at Birmingham

As part of UAB's Spring Commencement exercises the School of Engineering awarded, for the first time in its history, doctorates to three females from the State of Alabama in the same term. The women, Sandra Cutts, Jaquice Boyd and Ashlyn Manzella are all receiving their doctoral degrees in civil engineering.

"Dean (Lori) McMahon consistently pushes women to excel," said Cutts.

Cutts calls the Huntsville/Madison area home.

"For example if it were not for her constant encouragement, I would not have received a (Blazer Graduate Fellow) or applied for and was subsequently selected to be a National Fullbright Alternate. She exemplifies the value of diversity and what women can bring to the STEM Field.

Boyd, of Brighton (near Hueytown), chose UAB's program due to its stellar reputation in the workplace.

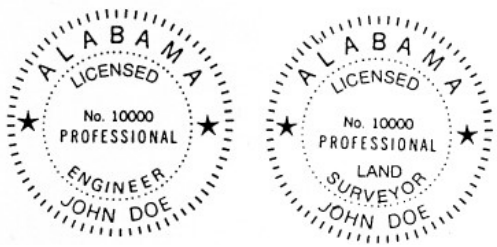
"My adviser, Dr. Robert W. Peters, has been very influential in shaping me to not only be the best engineer, but the best version of myself," Boyd said.

Having a strong female leadership base was a driving factor in Manzella's choice to become a blazer.

"When I expressed interest in engineering in high school, I was discouraged from pursuing it because it was deemed a man's field," Manzella said. "After completeing my undergrauate studies from UAB, I began working for UAB, and it was fitting to continue my studies with a program I knew and loved."

UNDERSTANDING BELS LAW & CODE

KNOW YOUR SEAL



Section 34-11-7 (c) of the BELS Licensure Law states that "Upon licensure, each licensee shall obtain a seal of the design authorized by the board, bearing the **licensee's name**, **licensure number**, and the legend, **"licensed professional engineer,"** or **"licensed professional land surveyor,"** as applicable.

Drawings, plans, specifications, plats, reports, and other documents **considered work product issued by a licensee** must be sealed, signed, and dated in accordance with rules of the board, thereby certifying that the professional is competent in the subject matter and is responsible for the work product.

ENFORCEMENT ACTION

JANUARY 14, 2020 MEETING

David Dewayne Woods / PLS

An investigation determined Mr. Woods failed to provide a survey to a client after receiving payment for the surveying services. A formal hearing was held on November 6, 2019, and at its January 14, 2020 meeting the Board reviewed the recommendations of the Administrative Law Judge. The Board then issued an Order that stated Mr. Woods was guilty of the charges against him. The Order also required his professional land surveyor license to be suspended for six months, pay a $2,500 fine, and pay $121.13 for the cost of the hearing.

Horace W. Walker Jr., / PLS

An investigation determined Mr. Walker's employees, while performing field work entered an adjoining property several times without making a reasonable attempt(s) to notify the property owner; and caused damage to the property. Mr. Walker agreed to a consent order that required him to pay a $3,500 fine, and the consent order and final order would be a public record.

Hisayoshi Hayashi / Industrial Tech Services, Inc.

An investigation determined Industrial Tech Services Inc., provided engineering services for projects in 2013 and 2018 without obtaining a certificate of authorization from the Board. The firm agreed to a consent order that required it to pay $250 for the cost of the investigation, pay a $1,000 fine, and the consent order and final order would be a public record.

NEW LICENSEES

• PE LICENSEES

ADAM KEITH KING
ALBERT TODD KIRKLAND
ALLISON WRIGHT BOUCHILLON
ALYSIA MARIE CARLISLE
AMANDA MARIE TAYLOR
AMANDA SUNSHINE TINSLEY
ANAND RAMANLAL SHAH
ANDREAS RUDOLF HAUN
ANDREW BARRY TUTEN
ANDREW GAROT PORTER
ANDREW RANDALL HALL
ARTHUR ALEXANDER CATE
AUSTIN BLAKE FORWOOD
AVIKAM N. LEVY
BALAKRISHNAN KANDOTH
BRANDON THOMAS COMPTON
BRANDON THOMAS RAYMOND
BRUCE FOY ROBERSON
BRUCE WAYNE KING
BRYAN DAVID FLYNN
BRYAN JAMES ZELINSKY
BRYCE DONALD GOOD
CALEB SCOTT BICKNELL
CARLOS LEONEL HERNANDEZ GARCIA
CHARLES DAVID TISHER JR
CHARLES EDWARD WORTHINGTON
CHARLES J. FLASK
CHARLES RANDALL THOMPSON JR
CHARLES W. KELLY
CHRISTA VANT HUL DEVRIES
CHRISTOPHER E. ALBRIGHT
COLIN DOUGLAS SCHAFFNIT
COREY JAMES DALEE
CORY MITCHELL STEIGERWALD
CRIS KELII WEBER
DANIEL DOUGLAS DEHON
DANIEL GENE PAIST
DANIEL JOSEPH BINET
DANIEL JOSEPH SALIBA
DANIEL ROY RICHARD DILLARD
DARREN KEITH JOHNSON
DAVIA ANN GERNAND
DAVID CHRISTIAN KEELOR
DAVID ISAAC BURKHALTER
DAVID JOSEPH THIBODEAU
DAVID MARK BARRETT
DEBORAH JANE DONALDSON
DIANA MITCHEN
DOUGLAS ALAN WILCOXON
DUSTIN ALLEN TILL
DUSTIN RATHE SMITH
ERIC THOMAS MORGAN
ETHAN JAMES WRIGHT
GARY DOUGLAS ABERNATHY JR
GARY ROLAND BROWN
GREGORY D. SHREVE
JAMES A. SCHONK
JAMES ALFRED NETTLES JR
JAMES CURTIS HOGELAND
JAMES DOUGLAS NEW
JAMES EDWARD HENDERSON
JAMES ROSS MYLES
JARED CHRISTOPHER HEALD
JAROD DAILY JONES
JASON ANDREW WILLIAMS
JASON LEE PRESCOTT
JEFFREY ALAN DEAL
JEFFREY R. ELLIS
JEREMY RYAN SMITH
JOHN JACOB CYBULSKI
JORDAN DANIEL-ARTHUR PHILLIPS
JOSEPH LAWRENCE RATIGAN
JOSEPH M. JERAY
JOSEPH ROSS ASHLEY
JOSEPH WHEELER SEWELL II
JOSHUA EARL GATLIN
JUSTIN DAVID THIBODEAUX
JUSTIN LEE LEITHAUSER
JUSTIN MYLES BRITT
KATHERINE WRIGHT GAMBLE
KATHRYN ELIZABETH FISHER
KEITH ALLEN ISNER
KEITH M. PRZECLAWSKI
KOSTA J. PAPPAS
KYLE JOSEPH LAWSON
LAURA RACHEL PIFF
LOGAN MARSHALL DUNN
LONNIE MATTHEW PIPER
M R HASAN
MAKSIM ALBERTOVICH SEGAL
MARCUS NAIL EWARDO
MARK ROBERTS
MARK ALAN BARGER JR
MARK L. MAKIN
MARK RYAN CASSON
MATTHEW UELMEN
MATTHEW EDWARD ARINEZ
MATTHEW SCOTT REUTHER
MELISSA MONE STROUD
MICAH JOHN SCOTT
MICHAEL CRAIG SMOTHERS
MICHAEL DAVID ANDERSON
MICHAEL JOHN FAIR
MICHAEL RYAN KELLEY
MICHAEL SCOTT ADEL
NEIL P. WU
NICHOLAS ANDREW STRAIN
NICHOLAS JOHN ANDREWS
ONUR USMEN
PHILIP JOHN FEIKEMA
PRESTON CLAY CAMPBELL
RAY JOHN ANDERSON
RAYMOND BUREN HERNDON
RAYMOND JOSEPH NALTY IV
REAZ MOHMED
REINALDO MANUEL DELIZ LUGO
RICHARD ALAN CAROTHERS JR
RICHARD ALAN DETHLEFS
ROBERT STEVEN FEDORCHAK
RODNEY WOTHERSPOON COLLINS
ROGER ALLEN COGDELL
SCOTT MARC DAVIS
SEAN JAMES MCGLUMPHY
SHANE ROBERT POWELL
SHANE WALLACE EBBERT
SHERRI HARVEY
STANLEY EDWARD RAISPIS
STEPHEN GLENN MERTZ
STEPHEN JOHN CHERNETSKI
STEVEN EMERY QUALLS
STEVEN TAYLOR TALUSKIE
SUDEEP SHRESTHA
SUDIP MANANDHAR
SUSAN M. SCHILLER
TAHIR MALIK
TAYLOR GARRISON LITTLETON
THOMAS DALE DUNCAN
TODD A. PHILLIPS
TODD ALLEN GREVIOUS
TODD JEFFREY REYLING
TONI MICHELLE CORNELIUS
TRAVIS STENSBY
TRAVIS DEAN DYESS
TROY TURLEY
TROY D. VAREBERG
VICTORIA CURTO
WAYNE RALPH WASSER
WILLIAM GARY SMITH
WILLIAM LAWRENCE TUCKER
WILLIAM SCOTT PARRISH JR

• PLS LICENSEES

CAMERON SCOT LOWE
CHRISTOPHER DREW PESNELL
DAVID KEITH STICKLES
JIMMY RUSSELL TOOLE
MICHAEL P. BLANCHARD
RICHARD BLAKE BATCHELOR
ROBERT WATERS EASLEY IV
TYLER MERRITT BIUS

• ENGINEER INTERNS

ALEX MICHAEL MCALISTER
AMELIA DEWITT TULIPAN
AMY ROSE HEBERTON
ASHLEY NICOLE THROOP
ASPEN MAEVE GOLDEN
BRODY JAMES TAYLOR
CARL-FRANKLIN WATSON RUSSELL
CHARLES DAVID TISHER JR
CHARLES WINSTON NORTON III
DANIEL GREGORY MATTOX
JABARI E. HARRIS
JACOB WARREN DEBUSK
JOHN BENJAMIN SATTERFIELD
JOSEPH RYAN HOEKENGA
KELSEY DUNN STEPHENS
LUKE ALAN BROWN
MICHAEL Z. IZZO
MILES ALTON HAMMAC
NAKEISHA NICOLE CHAPMAN
RACHEL P. HOWELL
ROBERT JACOB OTTS
SAMUEL GREGORY COCKRELL
STEVEN IRISH RICHARDS
TYROME DESHAUNTA BIVINS
ZACHARY KELLER CABLE

• LAND SURVEYOR INTERNS

ELIJAH KENT DODD
GREGORY JACOB GREEN

BELS

ALABAMA BOARD FOR ENGINEERS & LAND SURVEYORS

THE LAST LOOK

"The only place where success precedes work is in the dictionary..."

Vidal Sasson / *Business Tycoon*